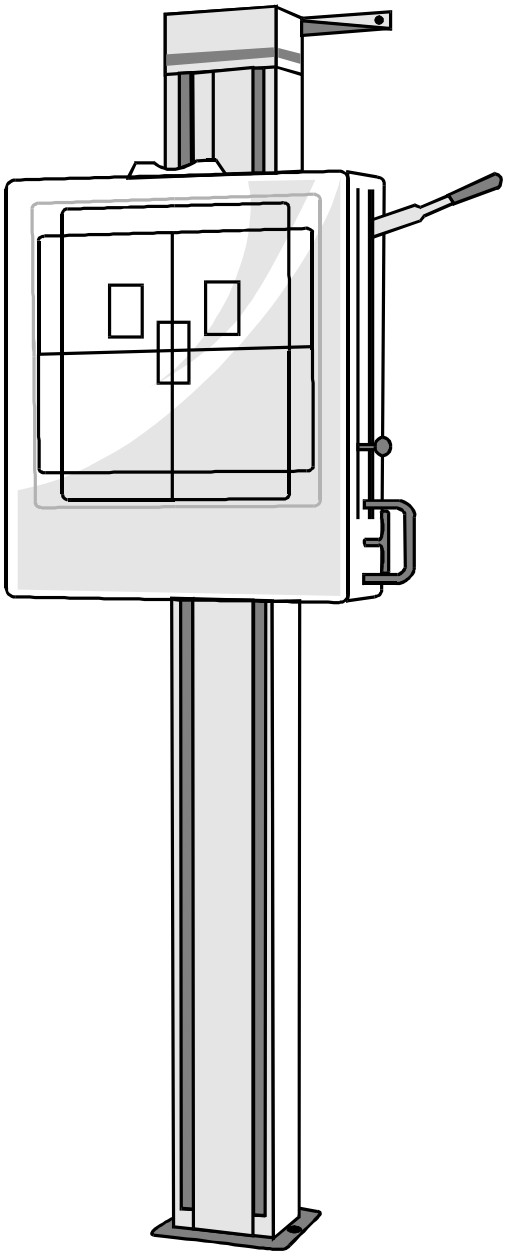
INSTALLATION AND MAINTENANCE

& PARTS MANUAL KS 80-2



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1. RADIATION WARNING

Diagnostic X-Ray Systems

X-Rays and Gamma-Rays are dangerous to both operator and others in the vicinity unless established safe exposure procedures are strictly observed.

The useful and scattered beams can produce serious or fatal bodily injuries to any persons in the surrounding area if used by an unskilled operator. Adequate precautions must always be taken to avoid exposure to the useful beam, as well as to leakage radiation from within the source housing or to scattered radiation resulting from the passage of radiation through matter.

Those authorized to operate, participate in or supervise the operation of the equipment must be thoroughly familiar and comply completely with the currently established safe exposure factors and procedures described in publications such as: subchapter J of title 21 of the Code of Federal Regulations, "Diagnostic X-Ray Systems and their major Components" and the National Council on Radiation Protection (NCRP) No. 33, "Medical X-Ray and Gamma-Ray Protection for Energies up to 10 MEV-Equipment Design and Use", as revised and replaced in the future.

Those responsible for the planning of x-ray and Gamma-Ray Equipment installations must be thoroughly familiar and comply completely with NCRP No. 49, "Structural Shielding Design and Evaluation for Medical Use of X -Rays and Gamma-Rays of Energies up to 10 MEV", as revised or replaced in the future.

Failure to observe these warnings may cause serious or fatal bodily injuries to the operator or those in the area.

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2. MECHANICAL - ELECTRICAL WARNING

Diagnostic X-Ray Systems

All of the movable assemblies and parts of this equipment should be operated with care and routinely inspected in accordance with the manufacturer's recommendations contained in the equipment manuals.

Only properly trained and qualified personnel should be permitted access to any internal parts. Live electrical terminals are deadly; be sure line disconnect switches are opened and other appropriate precautions are taken before opening access doors, removing enclosure panels or attaching accessories.

Do not remove the flexible high tension cables from the X-ray tube housing or high tension transformer, and/or the access covers from the transformer until the main and auxiliary power supplies have been disconnected.

Failure to comply with the foregoing may result in serious or fatal bodily injuries to the operator or those in the area.

ELECTRICAL GROUNDING INSTRUCTIONS

The equipment must be grounded to an earth ground by a separate conductor. The neutral side of the line is not to be considered the earth ground. On equipment provided with a line cord, the equipment must be connected to a properly grounded, three-pin receptacle. Do not use a three-to-two pin adapter.

INSTALLATION AND ENVIRONMENT

Except for installations requiring certification by the manufacturer per federal standards, see that a radiation protection survey is made by a qualified expert in accordance with NCRP 33, Section 6, as revised or replaced in the future. Perform a survey after every change in equipment, workload or operating conditions which might significantly increase the probability of persons receiving more than the maximum permissible dose equivalent.

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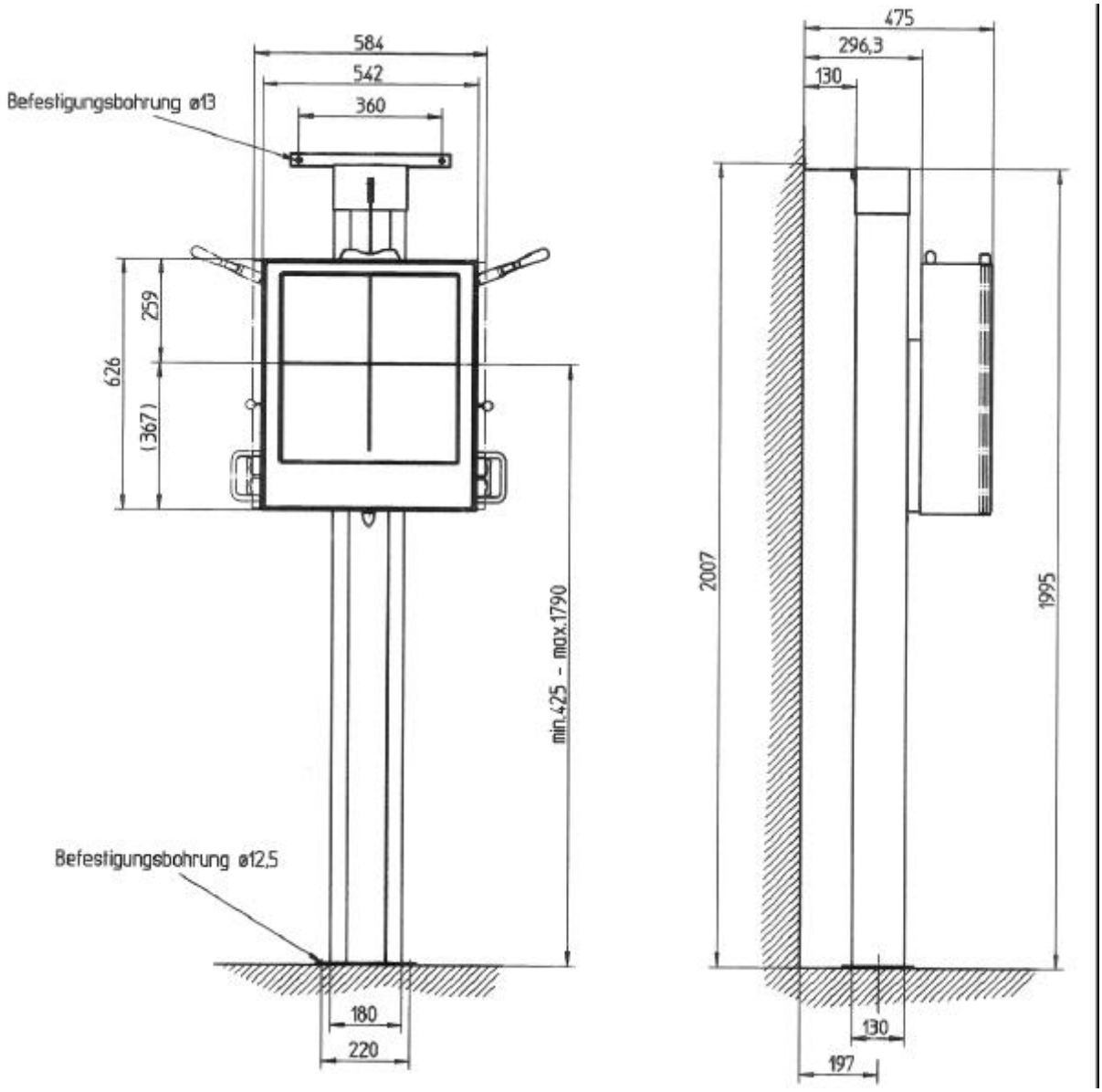
3. DIMENSIONAL DRAWING



mm	Zoll
2007	79,016
1995	78,543
1790	70,472
626	24,646
542	21,339
475	18,701
425	16,732
367	14,449
360	14,173
259	10,197
220	8,661
197	7,756
180	7,087
130	5,118

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4. MOUNTING OF THE UNIT

4.2 Condition after supply (after removal of the cartons)

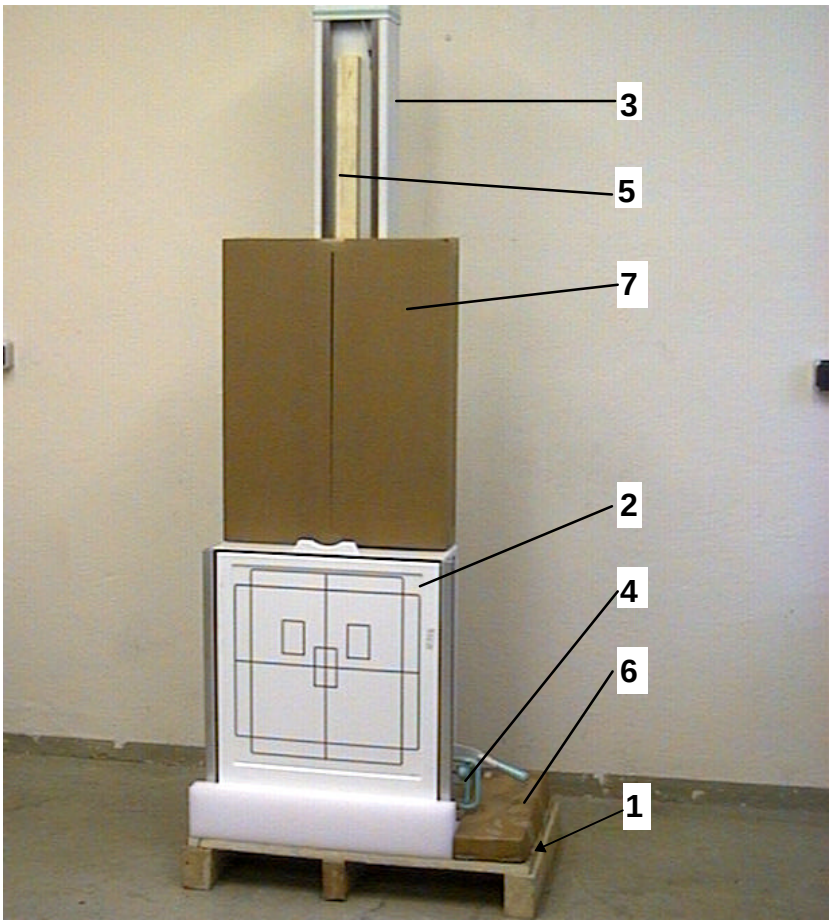

Fig. 1

1 Transport pallet
2 Cassette holder
3 Column stand
4 Wooden lath
5 Assembly wooden lath
6 Carton (Assembly accessories
7 Carton (Accessories when ordered)

4.3 Prepare fastening

Prepare assembly area according to drawing - page 5. The fastening points must be capable of holding 1400 Newtons per fastening point. Example: Liebig safety bolts B12/65 for floor mounting respectiveley B12/40 for wall mounting with a maximum tensile strength of B 150 DIN 1045.
When using a PVC floor please cut out the floor cover in the range of the ground for column.

4.4 Unpack equipment parts

Unpack equipment parts and check on completeness and damage.

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4.5 Remove column from the pallet

Put the delivered wooden lath (Fig. 3/Pos.2) in front of the transport pallet (Pos. 1). Remove the fastening screws of the column stand from the pallet. Attention: The column can tilt when loosen the fastening screws. There is a danger of injury.
Put the column stand (Pos. 3) through tilting and turning from the pallet onto the wooden lath (Pos. 2). Take it then from the wooden lath to the assembly place.

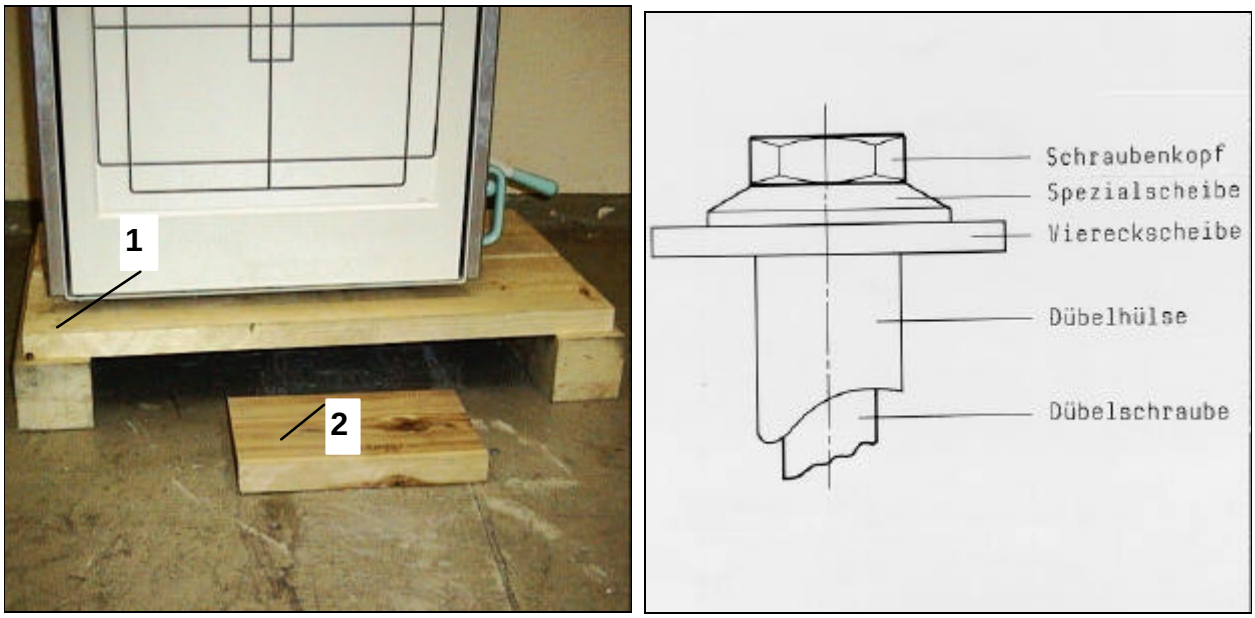

Fig. 3

4.6 Fastening of the stand

Align the stand with an air level at the assembly place (Fig. 5/Pos. 1 and Fig. 6/Pos. 2). Fasten to wall and floor with the included drill holes (according to Fig. 4).

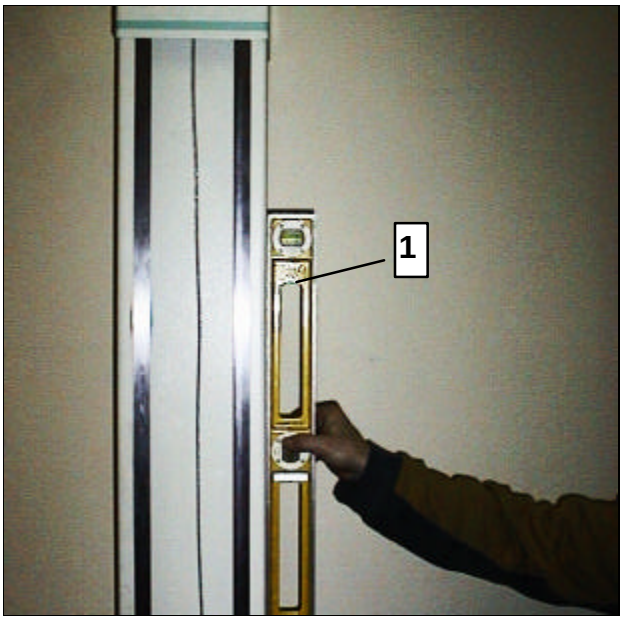

Fig. 5

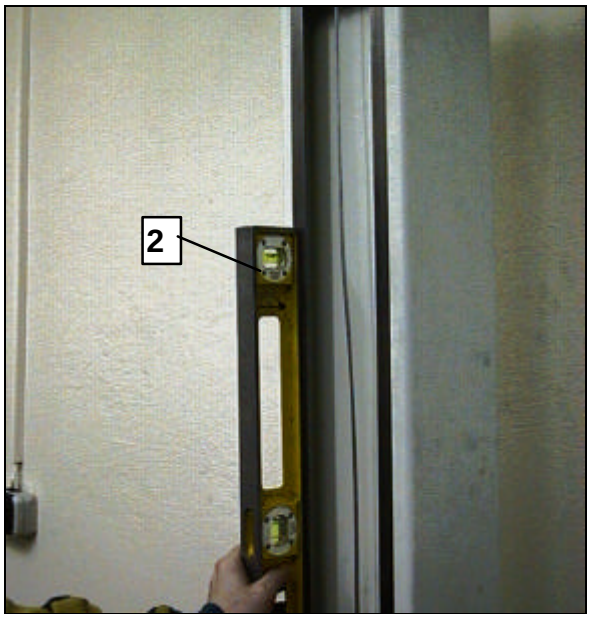

Fig. 6

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4.7 Insert the carrying robe

Pass through the vertical brake and remove at the handle (Fig. 7/Pos. 1). Drive cassette holder to the top (Pos. 2) and put the wooden lath (Pos. 3) under. Dismount both fastening screws (Fig. 8/Pos. 2+3) of the cassette holder. Open the cassette holder and remove the tare weights (Fig. 9/Pos. 1).

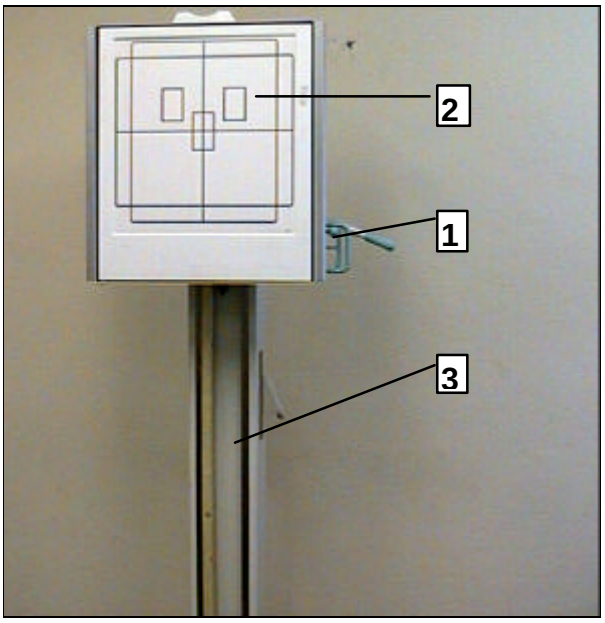

Fig. 7

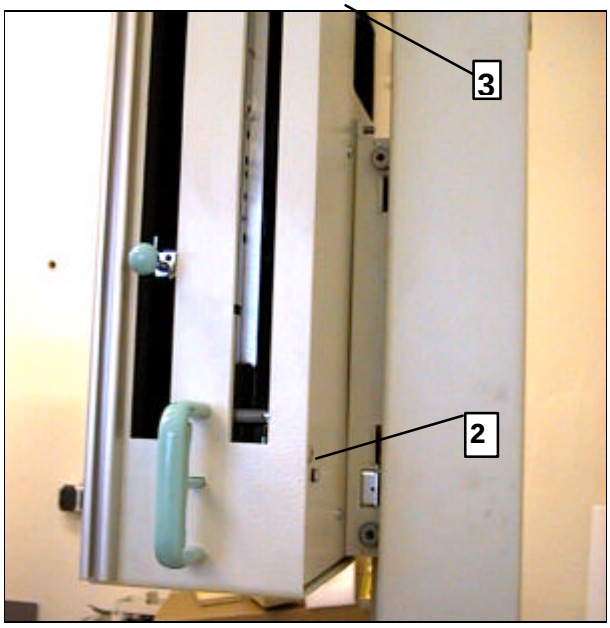

Fig. 8

Put in the carrying robe (Fig. 10 /Pos. 1) to the bolts of the vertical carriage (Pos.3) and fasten with washers and screws. Loosen the vertical brake (Fig. 7/Pos. 1) and lift meanwhile the cassette holder, remove the wooden lath (Fig. 7/Pos. 3) and let off until it hangs onto the carrying rope. Remove transport security (Fig. 11/Pos. 1).

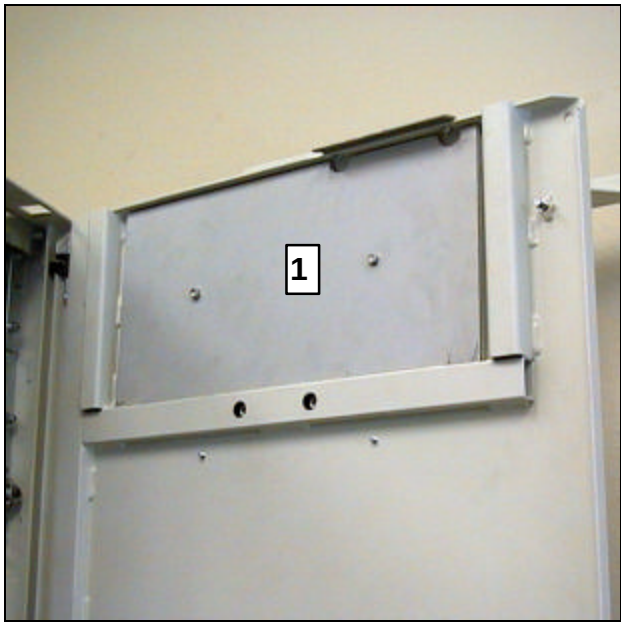

Fig. 9

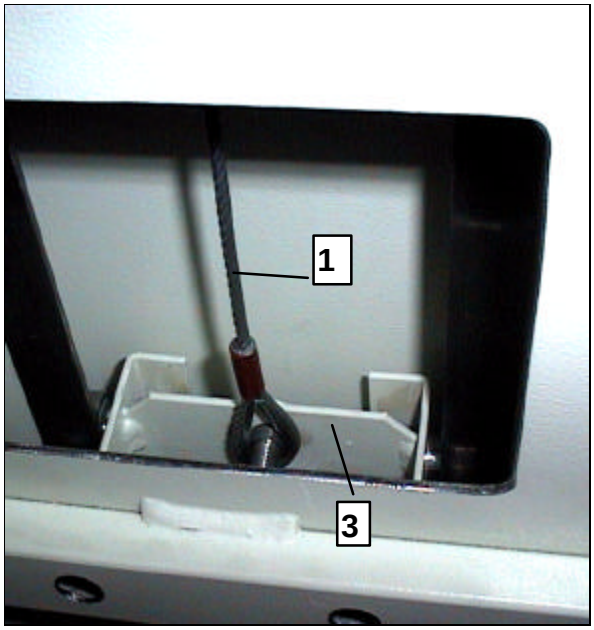

Fig. 10

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4.8 Installation of ION Chamber

Open the front plate (Fig. 12/Pos. 1), loosen the nuts (Pos. 2) and push the lower guide rail (Pos. 3) to the bottom. Insert the ION Chamber above into the guide axle (Pos. 4). Push the lower guide rail against the ION Chamber and fasten with both nuts.

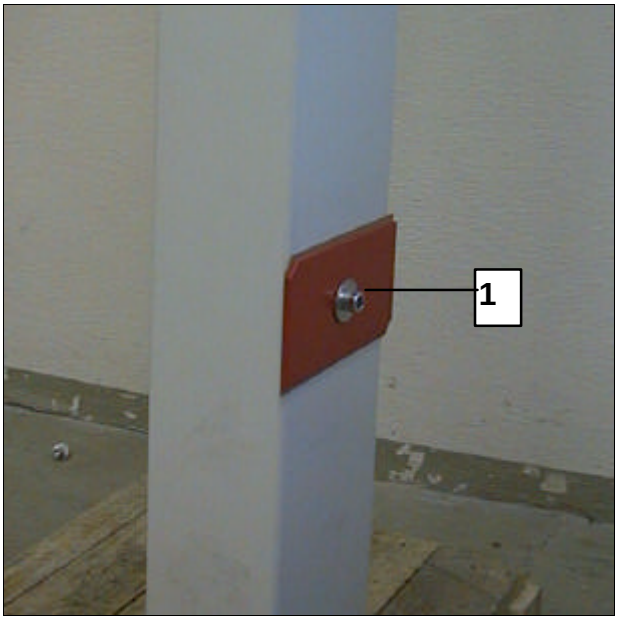

Fig. 11

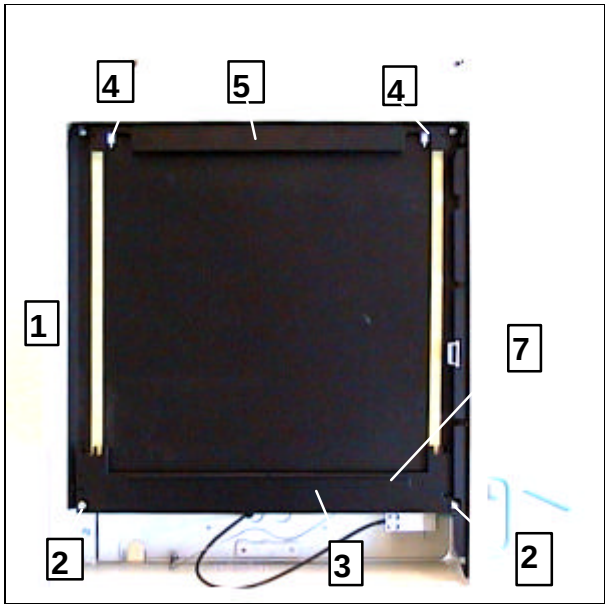

Fig. 12

4.9 Installation of grid

Open the front plate (Fig.12/Pos.1). Put the grid above in the holder tracks (Pos. 5) and insert below in the guide rail (Pos. 6). If necessary remove the lower guide rail to the top. Mediate the grid and bend forward on the left and right side a sheet-metal pin (Fig. 12/Pos. 7) for fixation.

4.10 Preparation of counterweight

Insert the large cassette in the cassette holder. Release the vertical brake (Fig. 7/Pos. 1) carefully, drive vertically and prepare with the tare weights (Fig. 9/Pos. 1) the balance.

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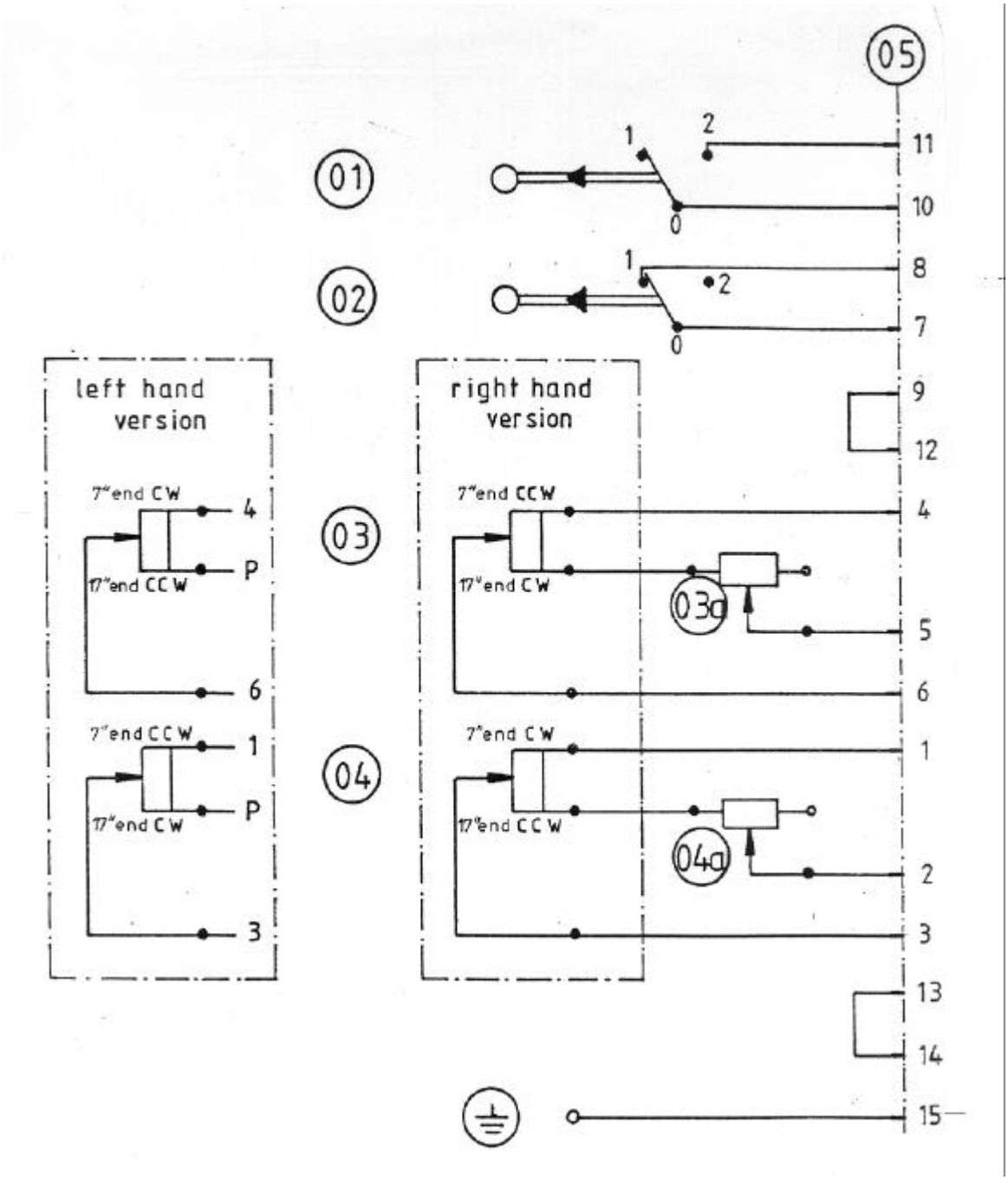
5. WIRING DIAGRAM



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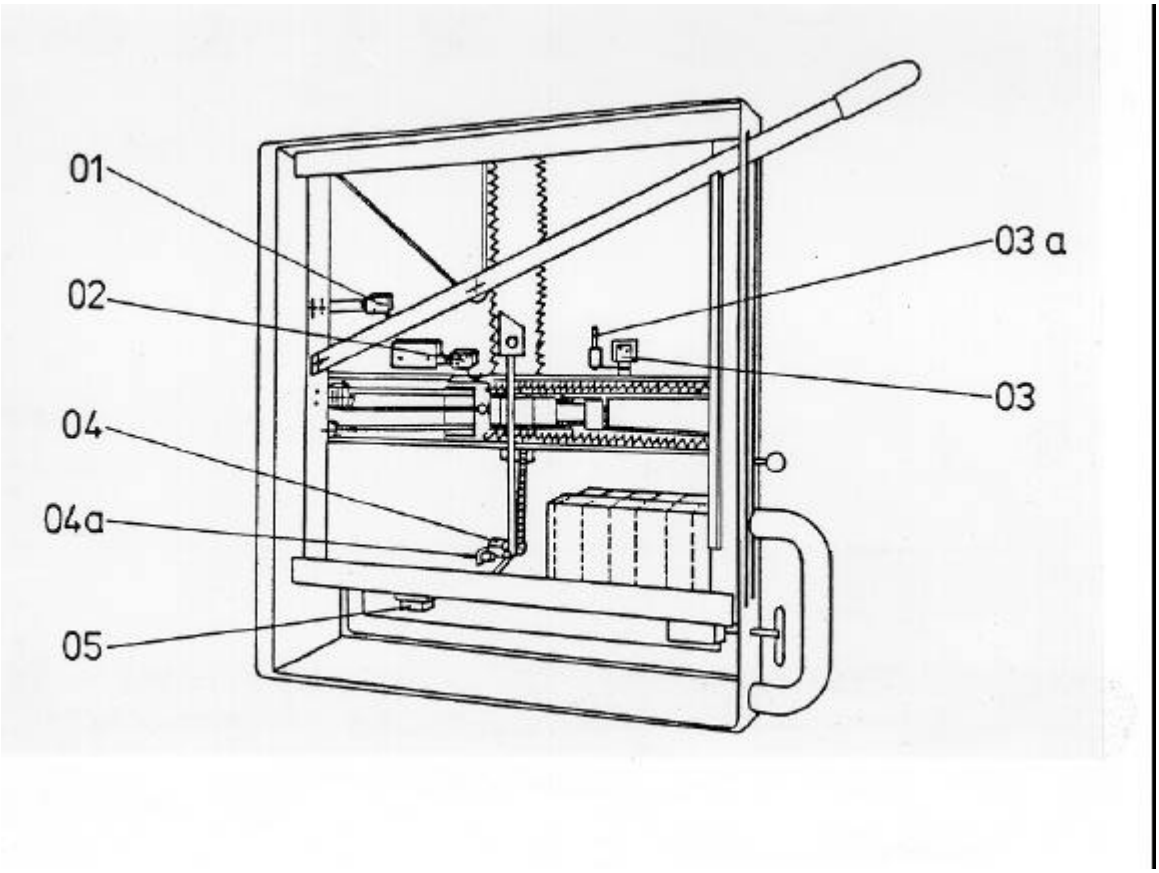
6. PHYSICAL LOCATION OF ELECTRICAL COMPONENTS



01 tension lever up - switch operated

02 tension lever up, without cassette - switch operated
tension lever up or down, with cassette - switch not operated

03 potentiometer horizontal 1 k 3 turn

03a trimpotentiometer 0.5 k

04 potentiometer vertical 1 k 3 turn

04a trimpotentiometer 0.5 k

05 AMP connection

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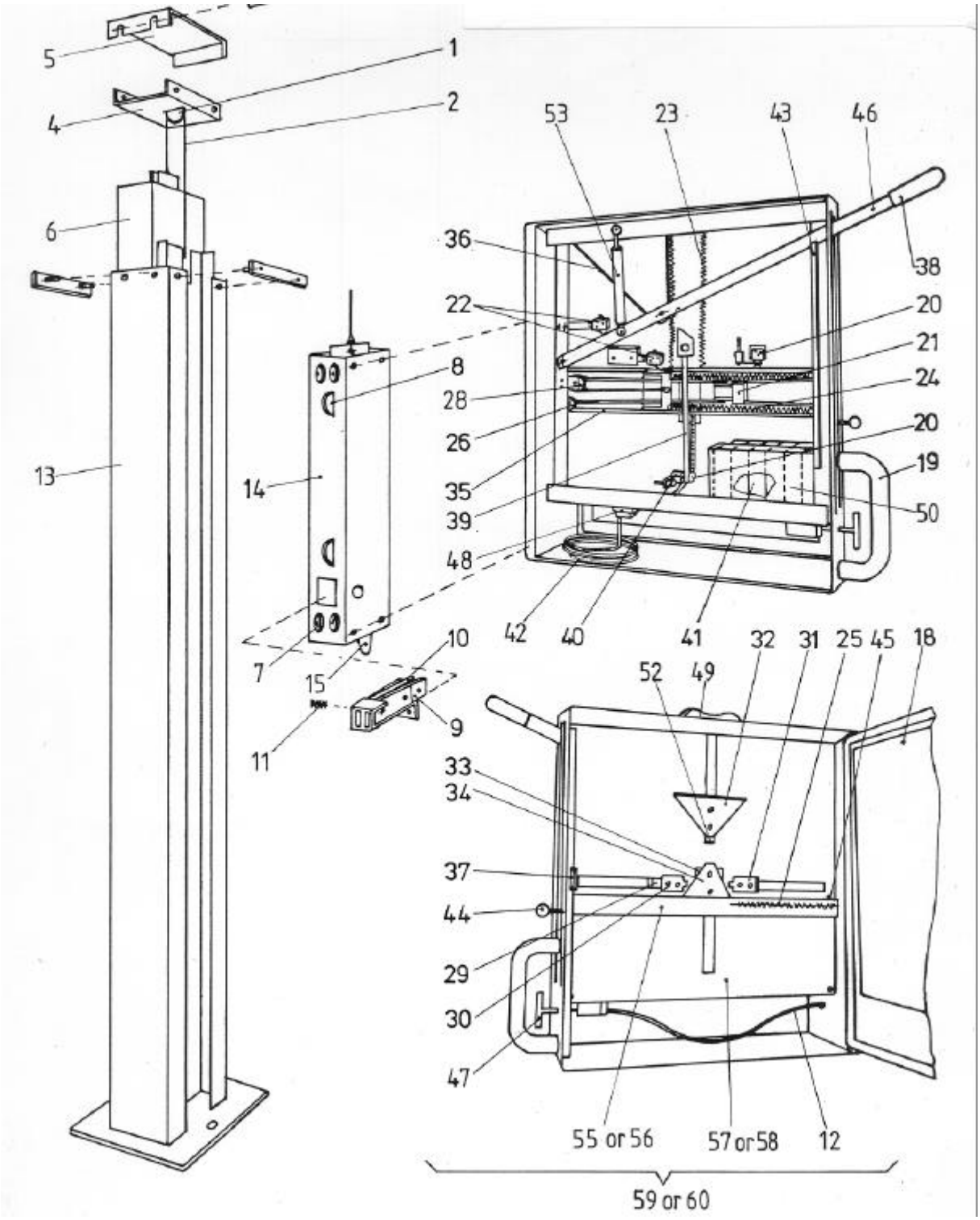
7. PARTS LIST



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SPARE PARTS

Part Names / Ordering names

Failed spare parts may be replaced only by original parts as listed below. When ordering spare parts, always indicate serial number of unit and complete number of part. The exchange of parts or elements may only be carried out by ourselves or by qualified personnel being authorized to do so. See also chapter: "Safety Notes".

REF. No.	Name	Part No.
	Cassette Stand comp.	0366 1023
1	Rope pulley	0366 1037
2	Wire rope	0366 1039
3	Wall mounting bracket	0366 1045
4	Pulley support	0366 1033
5	Head piece comp.	0366 1030
6	Counter weight comp.	0366 1040
	Vertical Carriage	
7	Ball bearing 608-2Z DIN 625	2400 0006
8	Ball bearing	0366 0068
9	Brake lever	0366 0077a
10	Brake lever	0366 0077b
11	Spring	0005 0042q
12	Wire rope	0005 0120
13	Column	0366 0024a
14	Vertical carriage comp.	0366 0055
15	Bumper	0005 0103b
16	Bearing with eccenter	0366 0073
17	Not used	
	Cassette Centering Device	
18	Cover plate	0366 1185
19	Handle	0005 0192b
20	Potentiometer	0366 0115a
21	Pressure spring	0005 0042h
22	Micro switch	0006 0184
23	Spring vertical	0366 0200
24	Spring horizontal	0366 0381
25	Spring	0366 0158
26	Sprocket	0366 0112
27	Not used	

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REF. No.	Name	Part No.
28	Rope pulley	0366 0121
29	Safety bolt	0366 0132
30	Guide bar left	0366 0134
31	Guide bar right	0366 0141
32	Guide bar top	0366 0143
33	Sliding foil	0366 0151
34	Guide bar bottom	0366 0152
35	Toothed belt	0005 0170b
36	Rope	0366 0168
37	Magnet	0005 0094
38	Grip	0366 0245
39	Toothed belt	0005 0170d
40	Trimpontentiometer 03a, 04a	0006 0285a
41	Trimweight 4Kt-Part N6	0385 0947
42	Cable 5m long	0366 0198
43	Tension lever latch	0366 0137
44	Knob	0005 0141e
45	Eject tab	0366 0159
46	Tension lever	0366 0195
47	T-Grip	0366 0085
48	Harness	0366 0196
49	Chin rest	0366 0192b
50	Trim weight holder	0366 0264
51	Not used	
52	Slide	0366 0148
53	Shock absorber	0008 0178
54	Not used	
55	Bottom cassette holder RH	0366 0162a
56	Bottom cassette holder LH	0366 0162b
57	Cassette centering device RH	0366 0402
58	Cassette centering device LH	0366 0403
59	Centering mechanism comp. RH	0366 0100a
60	Centering mechanism comp. LH	0366 0100b

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8. PREVENTIVE MAINTENANCE SCHEDULE

8.1 Periodic Maintenance and Service

In order to obtain continued safe performance of this equipment, a periodic maintenance program must be established. It is the owner's responsibility to supply or arrange for this service.

Maintenance procedures for the KS 80 are required six months after the completion of installation, and every six months thereafter under average usage conditions; more frequently under heavy usage conditions. These maintenance procedures are listed in the back of this operating manual and in the Mounting and Maintenance Instructions.

8.2 Cleaning

This equipment should be cleaned frequently, particularly if corroding chemicals are present. On enameled metal and plastic surfaces, chromeplated trim, and the Table Top, use a cloth moistened with warm water (with or without MILD soap depending on nature of contamination). Do not use strong cleaners or solvents as they will damage the finish or blur the lettering.

At last once a months, external parts exposed tracks on which rollers move should be wiped to remove any foreign material that may have accumulated. DO NOT USE A DAMP CLOTH. Wipe the tracks with a cloth lightly soaked with light machine oil or WD-40.

To protect the finish, polish the equipment with PURE liquid paste wax. Do not use a wax containing a cleaning substance. Polish all enameled metal surfaces.

8.3 Technical Maintenance

Note: Defective parts must be replaced by genuine spare parts acc. to the spare parts list. Use only non-acid grease for maintenance. Do not grease or oil sealed ball bearings.

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CHECK AND / OR TASK

Floor and Wall Mounting	Check all floor and wall mounting bolts upon proper fit tighten if necessary.
Vertical Brake	Move the vertical carriage through its entire range of vertical travel. Check function of vertical brake and its holding force. The brake must hold 250N (55 pounds) minimum with the force measured at the hand grip.
Running Tracks	Clean running tracks of column with a towel and oil with non-acid Vaseline.
Counterweight wire rope and Cassette-sizing-wire rope	Visually inspect the counterweight wire rope and the cassette-sizing-wire rope for wear, fraying, kinking and rust. If any bro ken wires are found, immediate replacement of the wire rope must be carried out. The counterweight wire rope must be changed every 3 years and the cassette-sizing wire rope should be changed every 2 years. Also inked wire rope and wire rope with any corrosion or rust at our near an anchor point should be replaced. Check for shiny spots which indicate wire rope wear. To detect broken strands run a cotton ball along the wire rope. The en tire length of the wire rope must be checked. Lubricate the wire rope by wiping them with a cloth saturated with STP (or similar lubricant). Apply the lubricant lightly so that an oil film is just visible. Wipe off any excess. Make sure the portion of each wire rope which bears against the pulley groove is carefully lubricated. Solvents should never be used to clean the wire rope. Check tension of the cassette-sizing-wire rope and verify that the wire rope can not slip of the pulleys.
Tension lever latch	Check tension lever latch for traces of wear and safe opera tion.Special attention must be paid to the detent itself when the tension lever is locked in the detent in the upper or down position. Make sure that the tension lever can not come out of the detent when hit by accident. If signs of unsafe operation and condition are detected the tension lever latch must re-

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placed immediately. Replace tension lever latch every 2 years.

To do this remove the back cover of the cassette holder mechanism. Reference Illustration 6. Using a 4 mm drill bit (11/64") drill out the three blind rivets which secure the tension lever latch. Replace latch to the latest revision level part No. 366 137.

DRILL OUT RIVETS

3 PLC.

AND REMOVE TENSION LEVER LATCH

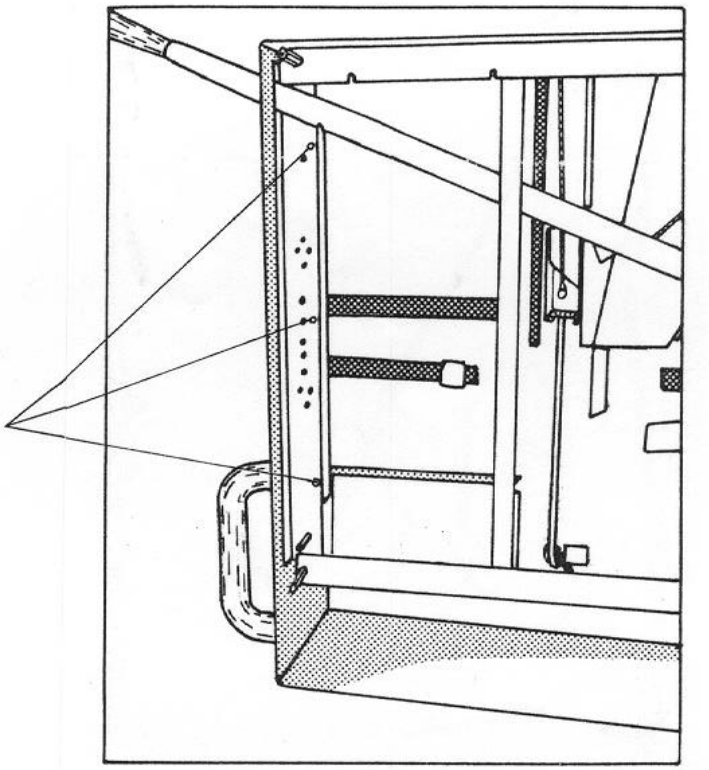

Fig. 14

With new latch installed check performance of tension lever.

Cassette-centering device	Load the cassette-centering-device with cassette sizes 8" x 10" and 14" x 17". Check for proper centering of the cassettes and performance of the ejector.
Potentiometer drive belts	Check condition and tension of the vertical and horizontal pot drive belts. If necessary, regulate tension of the drive belts. If they are damaged, exchange them.

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Electrical cables	Check all electrical cables for damage and proper routing. Check all ground connections. All exposed dead metal or other conductive parts that are exposed to contact during any servicing operation, including maintenance and repair shall be electrically connected to the equipment grounding terminal and must carry less than 0.1 resistance. Reinstall trim cover.

8.4 Maintenance & Inspection Table

Inspection or Maintenance	Interval period of work to be performed			
Inspect tension lever latch	every 6 Mon.			
Replace tension lever latch			every 2 Yrs.	
Inspect counterweight wire rope		every 1 Yr.		
Replace counterweight wire rope				every 3Yrs.
Inspect Cassette-sizing wire rope	every 6 Mon.			
Replace Cassette-sizing wire rope			every 2 Yrs.	
Inspect floor and wall mounting		every 1 Yr.		
Inspect vertical brake	every 6 Mon.			
Inspect potentiometer drive belts		every 1 Yr.		
Inspect potentiometer drive belts		every 1 Yr.		

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